Can synchronous multisensory looming stimuli bias attentional weights?

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Summary

Background

- Attentional weights are computed which guide selective attention (Bisley & Goldberg, 2010).
- Spatially linked audiovisual information is prioritized (Talsma, Senkowski, Soto-Faraco, & Woldorff, 2010).
- Multisensory processing is more dominant in elderly (Diaconescu, Hasher, & McIntosh, 2013).

Research Question

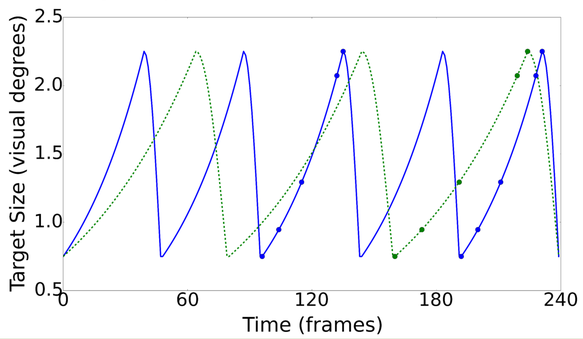
Can synchronous multisensory stimuli affect attentional weights in a bottom-up fashion?

Conclusion

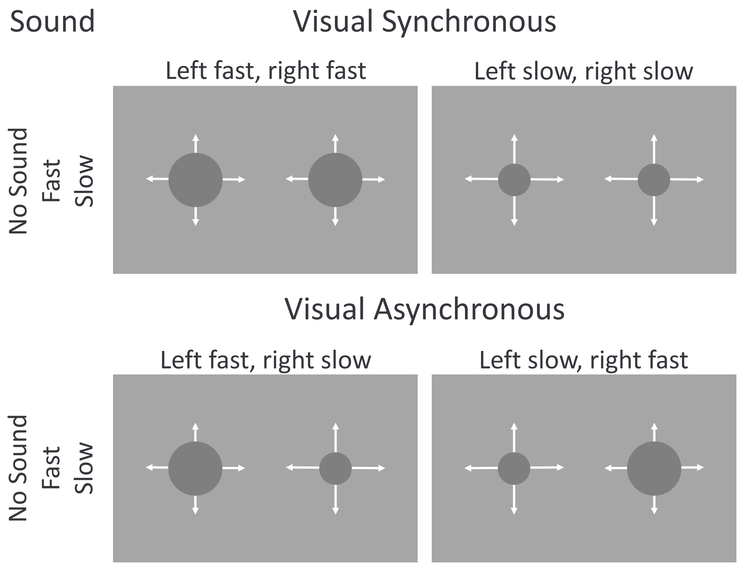
- Grouping by visual synchronicity aids divided attention.
- Healthy observers do not automatically assign higher attentional weights to audiovisual synchronous stimuli compared to audiovisual asynchronous stimuli.

Stimuli

- Looming frequencies: fast (1.25Hz), slow (0.75Hz)

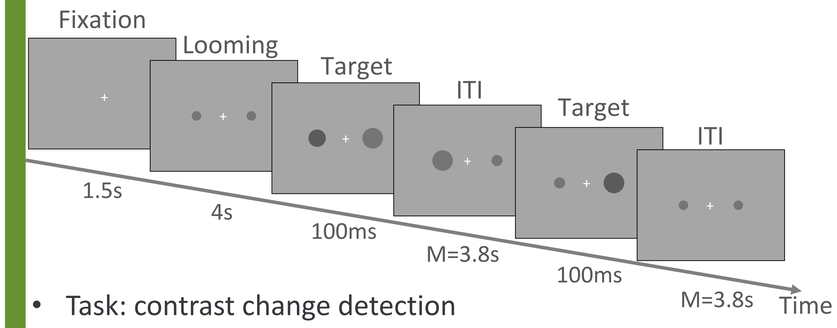


Block Design



Procedure

Main Experiment



- Task: contrast change detection
- 12 blocks: 44 target trials + 4 catch trials

Synchronicity Discrimination

- 2 looming disks presented (8s): 1 in sync with auditory looming
- Forced choice: which disk in sync with auditory looming?

Participants

Young group

- N = 18 (n = 16)
- Age: Median = 22 years (SD = 3.0)

Older group

- N = 28 (n = 20)
- Age: Median = 70 years (SD = 6.7)
- Neurologically healthy

Synchronicity Discrimination

- High accuracy:
  - Young group: M = 99% (SD = 2.5)
  - Old group: M = 96% (SD = 9.0)

Results main experiment